



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,549	08/24/2001	Saburo Wakita	213273US0CONT	8714

7590

03/27/2003

OBLONG SPIVAK MCCLELLAND MAIER & NEUSTADT
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202

EXAMINER

MACKEY, JAMES P

ART UNIT

PAPER NUMBER

1722

DATE MAILED: 03/27/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/935,549

Applicant(s)

WAKITA ET AL.

Examiner

James Mackey

Art Unit

1722

-- The MAILING DATE of this c mmunication appears n the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/258,821.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1722

1. Applicant should update the status of the parent application, including the patent number, in the insertion at the beginning of the specification.
2. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 22-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Daxer et al. (U.S. Patent 3,868,435; col. 1, line 45 through col. 2, line 61, and col. 3, lines 15-18).

Daxer et al. clearly teach a graphite mold (col. 2, lines 43-44) which may have a semispherical shape (col. 3, line 18) and therefore a circular cross section with mold sidewalls which taper upwardly and outwardly, wherein an inner wall face of the mold is coated with a silica layer containing a fine fused silica (quartz) sand having a particle size of up to 200 microns (col. 2, line 30).

5. Claims 22 and 24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by European Patent Application 463,543 (page 5, line 35 through page 6, line 29).

European '543 clearly teaches a quartz mold 3 (page 5, line 28) having a circular cross section (Figures 1-2), wherein an inner wall face of the mold is coated with a silica layer 4 containing a fine fused silica sand 6 having a particle size of 100-300 microns (page 5, line 46).

Art Unit: 1722

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application 463,543 (page 5, line 35 through page 6, line 29).

European '543 teaches a quartz mold 3 (page 5, line 28) having a circular cross section (Figures 1-2), wherein an inner wall face of the mold is coated with a silica layer 4 containing a fine fused silica sand 6 having a particle size of 100-300 microns (page 5, line 46). European '543 does not explicitly teach tapering mold sidewalls. However, ingot molds having sidewalls which taper upwardly and outwardly are notoriously well known in the casting art, and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify European '543 by providing the mold with such tapering sidewalls for the known benefit of facilitating removal of a cast ingot from the mold.

Art Unit: 1722

9. Claims 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snyder (U.S. Patent 3,396,935).

Snyder teaches an ingot mold comprising an inner surface layer comprised of fine fused silica sand having a particle size of 100-300 microns (see col. 7, lines 12-37, teaching particle sizes of up to 500 microns) and fused silica powder having a particle size of less than 100 microns (see col. 5, lines 4-12), bonded with a silica binder (note that the silica powder is integrated into the binder before formation of the ingot mold surface layer, and the binder includes silica acid sol). Snyder further discloses that the ingot mold “is not limited to use with specific mold sides or any particular metal mold bottom” (see col. 4, lines 7-9), but does not specifically teach graphite or quartz ingot molds. However, ingot molds made of graphite or quartz are well known and conventional in the ingot casting art, and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Snyder by providing the ingot mold substrate as well known and conventional graphite or quartz ingot molds, since the ingot mold would have been expected to perform in the same manner with any known ingot mold material as the ingot mold substrate, and since Snyder suggests that any known ingot mold material may be utilized. It would have been further obvious and well within the level of ordinary skill in the art to have provided the mold of Snyder with a mold space which tapers upwardly and outwardly toward the opening, and a mold space which has a circular or polygonal cross sectional shape, since such are notoriously well known features of ingot molds, it being obvious to modify Snyder with such notoriously well known features for their known benefits, e.g. facilitating removal of a cast ingot from the mold and formation of a cast ingot of a desired cross sectional shape.

Art Unit: 1722

10. Applicant's arguments filed on 24 August 2001 (in the Preliminary Amendment) have been fully considered but they are not persuasive.

Applicant argues that Snyder only discloses molds formed of metal, and therefore it would not have been obvious to modify the mold of Snyder by forming the mold of a non-metal. The Examiner disagrees. Ingot molds formed of graphite or quartz are well known and conventional in the casting art; further, while Snyder does not explicitly recite non-metal molds, Snyder indicates that the ingot mold "is not limited to use with specific mold sides or any particular metal mold bottom", such that a skilled artisan would have been motivated to modify the ingot mold of Snyder by providing the mold of known graphite or quartz ingot mold material, with the expectation that the mold of Snyder would perform equally well with such a mold construction.

Applicant argues that Snyder "teaches a wide range of particle sizes ranging from a fraction of a micron in size up to 500 microns in particle diameter or even greater", and thus there is no suggestion to provide a silica layer formed from a fine fused silica sand "having a particle size range of **only** 100-300 microns"; however, such an argument is not commensurate in scope with the claims, which do not exclude additional silica particles of differing sizes outside the claimed range. Snyder (col. 7, lines 12-37) teaches that the fine fused silica sand has a particle size overlapping the claimed range.

Applicant argues that Snyder does not disclose providing a refractory layer formed from silica powders of two different particle size ranges, one of which is 100 microns or less while the other ranges from 100-300 microns; however, Snyder teaches a mold layer of fine sand having particle size of up to 500 microns (col. 7, lines 12-37) with a silica powder having a particle size

Art Unit: 1722

of less than 100 microns (see col. 5, lines 4-12), bonded with a silica binder (note that the silica powder is integrated into the binder before formation of the ingot mold surface layer, and the binder includes silica acid sol).

11. This is a continuation of applicant's earlier Application No. 09/258,821. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

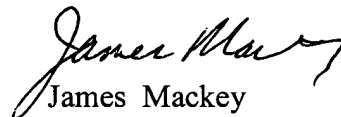
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mackey whose telephone number is 703-308-1195. The examiner can normally be reached on M-F, 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on 703-308-0457. The fax phone numbers for the

Art Unit: 1722

organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



James Mackey
Primary Examiner
Art Unit 1722

3/22/03

jpm
March 22, 2003